DIGITAL ACTUATOR CONTROL AND METHOD

ABSTRACT

[030] Disclosed are methods and apparatus for digital control of a head-disk assembly actuator with dynamic velocity compensation. In preferred methods of the invention steps are disclosed in which, the actuator voltage in an HDA is sampled and a velocity error is determined. The voltage applied to the actuator is compensated for the velocity error. Disclosed methods of the invention also include steps for measuring the actual voltage at the actuator motor and alternatively, for calculating the actuator motor voltage using digital processing techniques. A digital voltage command is then provided for applying compensated voltage to the actuator motor. Apparatus for implementing the methods of the invention in a hard drive assembly having an actuator motor is also described. The apparatus includes a sampler for sampling an actuator motor voltage, a timer, and a digital processing engine for receiving a target actuator voltage command and the digital actuator motor voltage sample and for outputting a digital voltage command for controlling the actuator motor.